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ABSTRACT

A systems model is presented which combines critical incident research techniques and systems methodology to improve individual decision-making. The model: (1) revolves around a critical incident approach to understanding personal history of decision-making in several environments such as family, educational, and vocational; (2) utilizes the systems approach to review and analyze decision making-processes at various critical points in the past; (3) enhances individual awareness of personal priorities; and (4) helps to improve critical thinking skills. Methods of using the system are suggested such as providing users with opportunities to learn about themselves in relation to life in general and to evaluate past decision-making practices in terms of future career and educational planning. (Author)

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A SYSTEMS MODEL FOR ANALYZING DECISION MAKING AT CRITICAL LIFE POINTS

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A Systems Model For Analyzing Decision Making At Critical Life Points

R. J. Nelson[1]

Critical Incident Technique

A technique for recording important events of life was formulated by John D. Flanagan approximately thirty years ago. His work on the identification of critical factors in human performance during World War II served as the basis for his later work using the critical incident technique to solve practical problems in health, education, and industry. Hundreds of researchers have used the technique since the first article describing it was published by Flanagan (1954). It was used recently by Flanagan (1975 & 1978) to study the quality of life in America. The critical incident technique was succinctly described by Travers (1964) as a method for making observations which also involves judgments by the observer about what should be observed and recorded. A brief explanation of the critical incident technique is quoted below (Flanagan & Scmid, 1959).

"The conditions which are set up to define a series of critical incidents are intended to obtain a representative, objective set of factual events all judged by the observer to contribute to a single aim or conclusion. Among these conditions are:

1. The definition of the situation observed. This usually includes the delimitation of the incidents admitted to those involving specific persons, locations, conditions and activities.

2. The relevance to the stated aim or conclusion. This represents a judgment or inference on the part of the observer. Because of the explicitness of the definitions and the established criteria as to what constitutes an incident which has sufficient relevance and effect that it should be admitted as one piece of evidence regarding the stated aim or conclusion, these judgments and inferences are usually found to be relatively objective.

3. The qualifications of the observers. In order to make the type of judgments and inferences mentioned above, it is essential that the observers have appropriate experience and training. The nature and extent of this will, of course, depend on the specific situation.

A sample of critical incidents thus defined can be treated like any other set of observed data to describe, to define, to compare, or to evaluate specific hypotheses." (p. 136)

The model presented in this paper differs from that described above in that it utilizes self-observations of critical incidents for the analysis of past decision making practices and their subsequent outcomes.

Illustrated Cases of Decision Making Analysis

Some preliminary work was conducted toward the development of the model with graduate students at the University of Bridgeport. Individuals were asked to define past critical incidents in their lives which related to career and educational development (this was the delimiting condition from number one above). They were allowed to use any criteria for relevance as long as it had meaning for them personally (condition number two). Qualifications of the students (observers) were judged to be adequate since they were all capable enough to have earned at least one degree in college and each individual was assumed to be the most knowledgeable concerning personal objectives and constraints at the time they made their critical decisions (condition number three). Two examples from these initial inquiries are summarized and discussed below to illustrate the process of analyzing decision making behavior through critical incident analysis.

Shirley left school at age sixteen and obtained a job working in a toy factory. She hated the job, quit, then returned to high school where she was told she would have to repeat the eleventh grade which was, as she described it, "a severe blow to the ego." Her new eleventh grade friends, however, proved to be very supportive and they persuaded her to attend collegewith them after completing high school. She majored in

biology initially, but decided she did not like it at the end of her freshman year and switched to elementary education. After graduation she obtained a position in a day-care center which she soon found unrewarding. She decided to attend the university on a part-time basis to prepare for a career as a school counselor. A graphic display of Shirley's decision making path is illustrated in Figure 1.

Insert Figure 1 about here

Bob never planned to attend college until he began working in a textile factory after graduating from high school. He disliked his job so intensely that he quit to sell ice cream bars on a street route and, even though he liked being a "Good Humor Man", he knew his potential for career development was extremely limited. Consequently, he enrolled in an institute for the study of culinary arts and stayed to complete a two year program which qualified him as a chef. He then decided he had no interest in pursuing a career in this field and joined the army. After completing his army service he enrolled in a university and majored in business administration. He "soon learned to hate" business administration so he switched to English as a major. The English curriculum was rewarding to him and upon graduation he took a job with a large city newspaper. However, he found the newspaper job boring and quit to sell real estate, a job which put him in contact with state welfare personnel with whom he developed close contacts and professional interests. When an opening in welfare work occurred his friends encouraged him to apply, which he did, and subsequently was hired for the job which he described as "tremendously enjoyable." His program at the university stems from his own desire to become more proficient in his present career. A graphic illustration of Bob's decision paths related to these critical incidents

is depicted in Figure 2.

Insert Figure 2 about here

The cases of Shirley and Bob are abbreviated, but they represent an effective means for using the critical incident technique to learn more about a particular individual's process of making a series of related decisions. The patterns of critical points in educational and vocational development related by these two graduate students were typical of others in that most followed a similar trial and error approach heavily influenced by family and/or societal values, personal feelings, and suggestions by "significant others" in their early decision making practices. The students were able to identify critical incidents and use them to trace decision making habits which were, from this hindsight analysis, devoid of knowledge about effective decision making. The proposed model was designed to improve this situation in a systematic way.

Decision Making Processes

How does one typically select a course of action? Simon (1976) reported that, according to his research on decision making processes in administrative organizations, persons faced with decisions typically looked for a course of action that met a set of minimal requirements, even if more than one criterion was used. He termed this common practice of sequentially considering alternate courses of action until one was found that was "good enough" a "satisficing strategy." Simon attributed this satisficing approach to the limited information processing capabilities of humans which forced individuals to "constantly resort to gross simplification when dealing with complex decision problems" (p.xxix). He characterized people as generally disinclined to collect information

about complicated elements related to choice outcomes, therefore causing them to settle for a choice that appeared to be "better than the way things are now." Likewise, the results of research by Cassidy and Kurfman (1977) prompted them to point out that the "decisions of most people are made on impulse, or from habit, or by default - in essence, without much thought" (p. 6). They described decision making as a complex process involving facts, values, generalizations, and feelings which are constantly affecting all aspects of the decision making process. Their conclusion is also reminiscent of Kelly (1963) who said that to consider a personal decision or problem to be solved by another individual required also considering the way that person envisioned the outcomes of the decision.

The usefulness for achieving the desired outcome, the utility of a decision, has been studied by many including Cronbach and Gleser (1975), who concluded that it was an impossibility for anyone except the decision maker to determine the "correct" course of action and recommended that each person's decision be evaluated on a different scale of values. Since an important determiner of a decision's utility is the value system of the decider, and a particular choice can be made only once, they concluded that particular decisions "must be evaluated on the basis of the expected outcome and its value for this individual" (p. 117). Katz (1975) viewed the content of choice as a less defensible criterion than the choice-making process and Sandell (1968), from his research relating attitudinal and situational factors to decisions, reported that an individual's choice probabilities should be evaluated in terms related to individual differences which he illustrated by stating that "a person relatively high on the trait of choosing a certain alternative in one situation is not necessarily high on the same trait in another situation" (p. 395). Magnusson (1971) echoed the above when he wrote "the important character-

istics of an individual are to be found in his specific manner of adjusting to different situations" (p. 527). Experiments by Magnusson and others (Magnusson, Gerzen & Nyman, 1968; Magnusson, Heffler & Nyman, 1968) reinforced the conclusion that individuals differ in their ways of adjusting to varying characteristics in different situations. A major conclusion on the generality of behavioral data (Magnusson, 1971) was that "individuals differ not mainly with regard to certain stable aspects of behavior but particularly regarding their specific, characteristic ways of adjusting to the varying characteristics of different situations" and that "knowledge of the interaction between individual and situation is essential to an adequate description and understanding of behavior." (p. 851)

The Systems Model

The accompanying figures describe the model through a systems approach. Silvern (1972) defined a system as "the structure or organization of an orderly whole, clearly showing the interrelations of the parts to each other and to the whole itself." (p. 1) This system of combining resources in a functional manner allows the reader to readily perceive the whole as well as all parts of the system. It also enabled the writer to program the model for a computer more readily.[2]

The complete process, illustrated in Figure 3, defines the critical incident technique and starts the individual user on the process of self-analysis in subsystem 1.1. The steps in the process follow chronologically through 1.6 when the user must make a decision. If the decision is made to continue recalling critical incidents from which a major decision was made, then 1.7 follows and the user moves through the loop (1.1 through 1.7) again. This loop continues idefinitely until the user decides there are

no more critical incidents to explore or weariness sets in thus reducing the criticality of any other incidents.

Insert Figure 3 about here

A decision to end the phase related to critical incident analysis would take the user to 1.8 where the search for critical incidents is discontinued and the data received are anlayzed and reported to the user as indicated in 1.9. The user then has a chance (1.10)to analyze the data and again make a decision to terminate or reenter the program with another critical incident (1.7). A reentry would again activate the loop from 1.1 through 1.6. If a decision is made to quit the analysis process, the user must decide whether to terminate the program (logoff the computer) or activate a new program designed to help improve the skills involved in decision making (subsystem 1.11).

A breaksown of subsystem 1.1 is provided in Figure 4. The four levels of detail represented here provide definitions and cues for assisting the respondent to recall personal incidents in which critical incidents were made. Subsystem 1.1.2.2, for example, stimulates the user to search an area for critical incidents which might be missed if left to memory alone, without such prompting. This illustration is not meant to include all possible cues and, obviously, the subsystem could be greatly expanded. The arrowheads at the ends of signal paths indicate the flow of information.

Insert Figure 4 about here

Subsystem 1.2, illustrated in Figure 5, prompts the user to begin the evaluation of past decision making performances. The eight decision modes are based upon research and synthesization by Tiedeman (1974). There is a considerable amount of information available about each of the decision modes, but only a small fraction of it could be included in

the model at this stage of development. The limited amount of computer storage space necessitated some foreshortened definitions and a reduction of the eight ways to four in the computerized version, however, they still span the same dimensions on the continuum.

Insert Figure 5 about here

After a decision about the way the critical decision was made is identified, the participant (user) is prompted to consider other influences on the decision, as shown in Figure 6, subsystem 1.3. A two-dimensional effect is illustrated with the user considering influences from family and friends, media, and tangibles so that they can be related to a different level of categorization. One might argue as to whether this system contains the correct combination of influencers, but as previously noted, the purpose here is to illustrate potential for a dynamic, interactive computer-based system. Subsystem 1.3.4 contains a three category element based on the U.S. Dept. of Labor job classification system consisting of people, data, and things. As an identified influence is chosen from the subsystem 1.3.1, 1.3.2, and 1.3.3 the computer automatically places it in the appropriate category and stores it for future use in analyzing and reporting the data to the user. It can be noted that in this subsystem no sequential order is necessary; the individual may move around any of the subsystems and in any order within the subsystems at will. Figure 6 is based primarily on the work reported by Endler and Magnusson (1976).

Insert Figure 6 about here

Subsystem 1.4 (Figure 7) is based upon the work of Riggs (1968) who developed decision models for use by economists. Riggs recognized that each situation has a uniqueness for every individual and he postulated two important approaches in decision making, the intuitive and the analytic. The intuitive approach is "oriented in the present but informally embraces

memories of the past and estimates of what may happen in the future." The analytic approach is "a systematic study and quantitative evaluation of the past and future." (p 6) Riggs pointed out that whenever multiple objectives are present in a decision situation, there probably is no single course of action that will optimize all objectives. Therefore, an alternative must be selected that achieves the best possible balance among conflicting objectives. An attempt is made in the system to force the user to consider both approaches, analytic and intuitive, in Figure 7, subsystems 1.4, 1.5, and 1.6.

Insert Figure 7 about here

After judging past decisions (Figure 7, subsystem 1.4) the user moves on to subsystem 1.5 and takes a serious look at personal involvement. The data base for subsystem 1.5 (Figure 7) was drawn from studies by Endler and Magnusson (1976) and Janis and Mann (1977). Janis and Mann emphasized "self-reactions" in the decision making process and noted self-approval to be an essential requirement for decision satisfaction. They said, "Gaining utilitarian and social regards is not enough; the person has to be able to live with himself." (p.9) It is not possible to take the same strong stand in this model, but it is hoped that some of the exploration done by the user will at least stimulate some personal value clarification.

The subsystem 1.6 (Figure 7) prompts the user to rate the outcome of the decision as either more positive than negative or more negative than positive. This bipolar evaluation was used for the sake of simplicity in developing the computer model. However, once again, the user is forced to make a decision and based on this decision moves on to another incident and a repeat of the process or receives a summary of the data with a comparison of what his observations and reactions to them have been.

The model was developed to facilitate the analysis of elements considered critical by individuals tracing their decision making practices. The user is provided with a systematic, research based guidance system for evaluating past decision making practices. If necessary and desired the user may also study ways of improving decision making. The model is suitable for computer implementation and a modified version has been developed and demonstrated.

Footnotes

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[2] Work on the computer model was conducted while the writer was an Advanced Study Fellow at the National Center for Research in Vocational Education at Ohio State University, Columbus, Ohio.

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Figure 1

(Shirley)

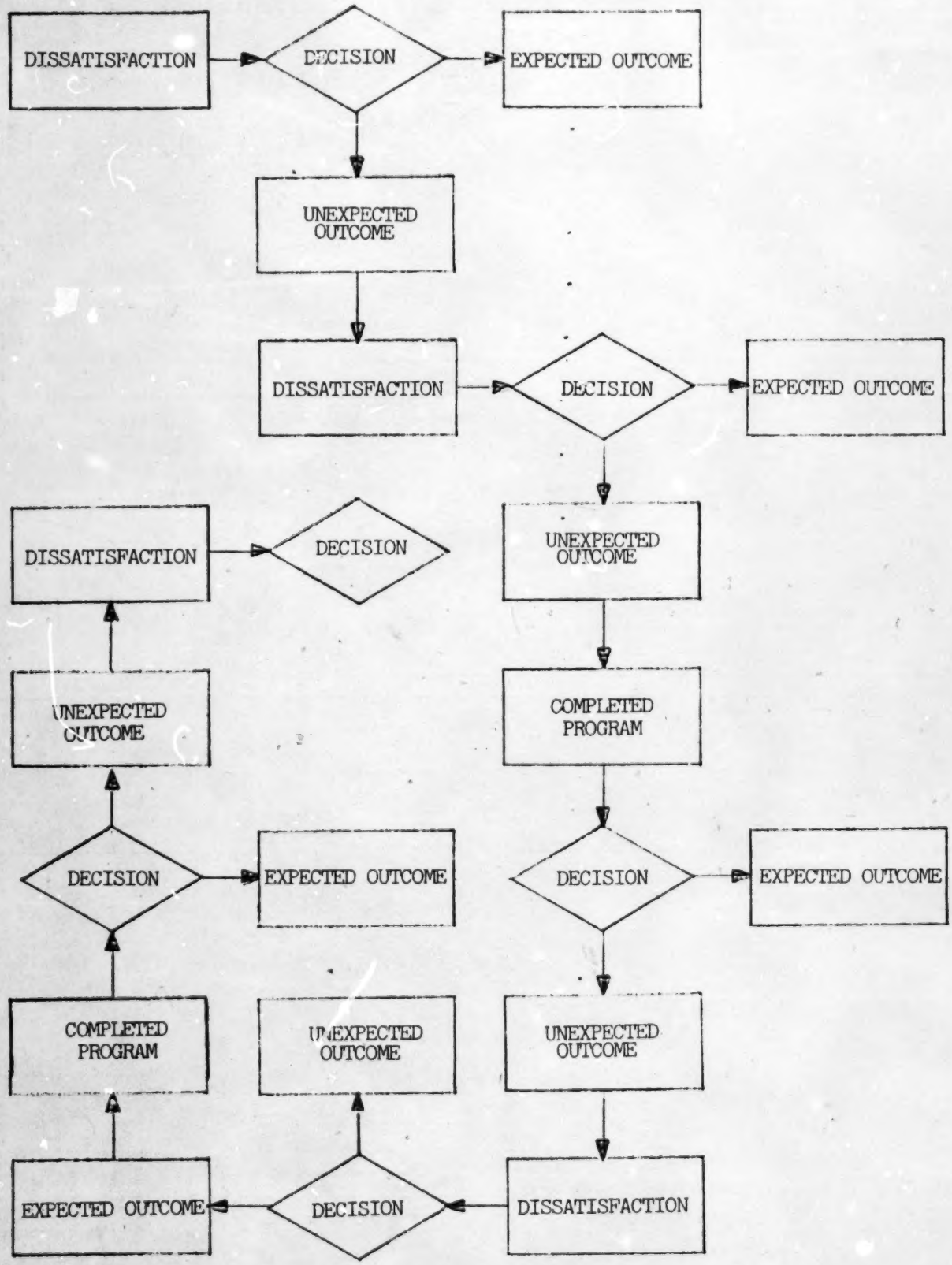


Figure 2

(Bob)

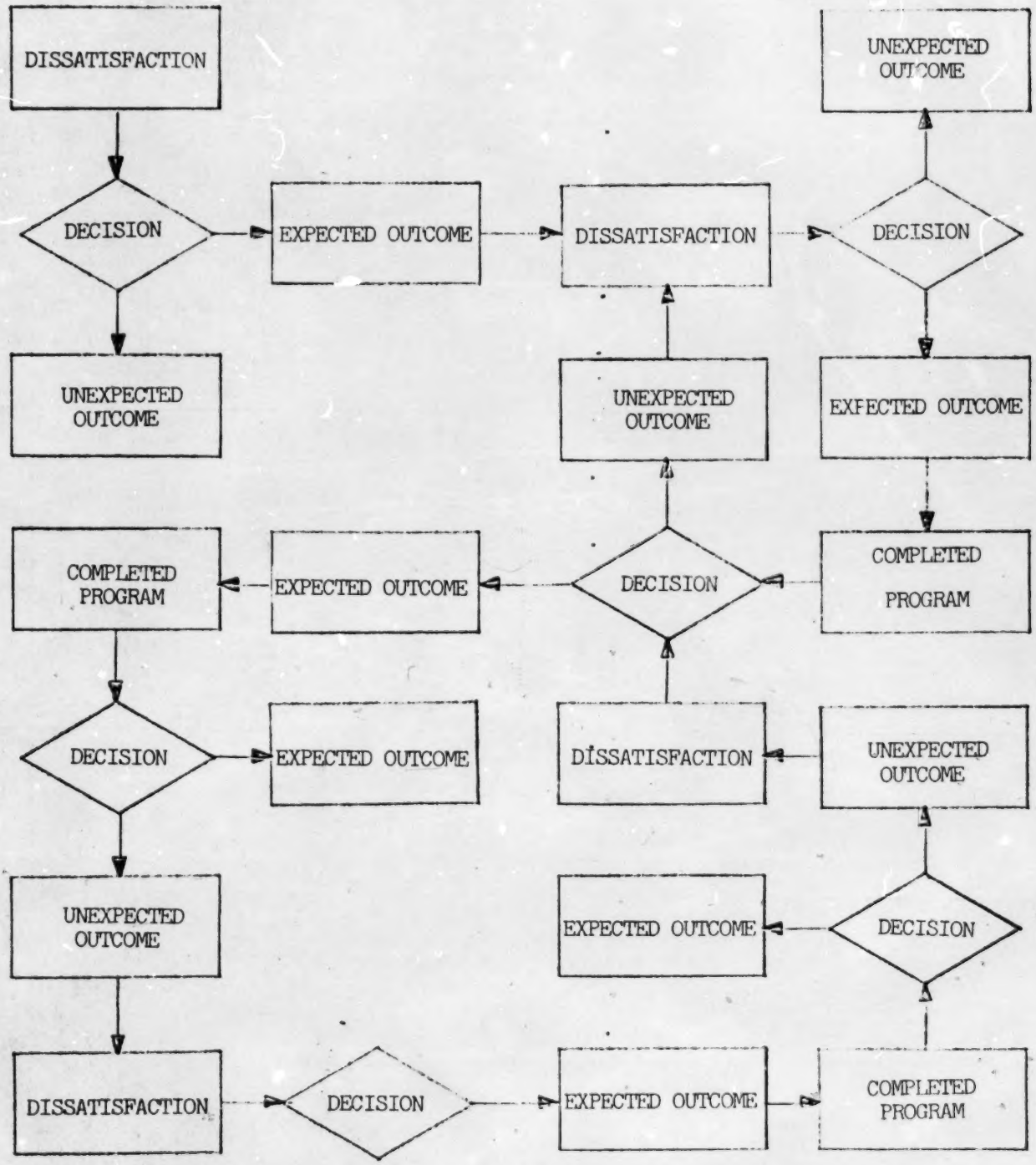

DISSATISFACTION
DECISION
EXPECTED OUTCOME
DISSATISFACTION
DECISION
UNEXPECTED OUTCOME
UNEXPECTED OUTCOME
UNEXPECTED OUTCOME
EXPECTED OUTCOME
COMPLETED PROGRAM
EXPECTED OUTCOME
DECISION
COMPLETED PROGRAM
DECISION
EXPECTED OUTCOME
DISSATISFACTION
UNEXPECTED OUTCOME
UNEXPECTED OUTCOME
EXPECTED OUTCOME
DECISION
DISSATISFACTION
DECISION
EXPECTED OUTCOME
COMPLETED PROGRAM

Figure 3

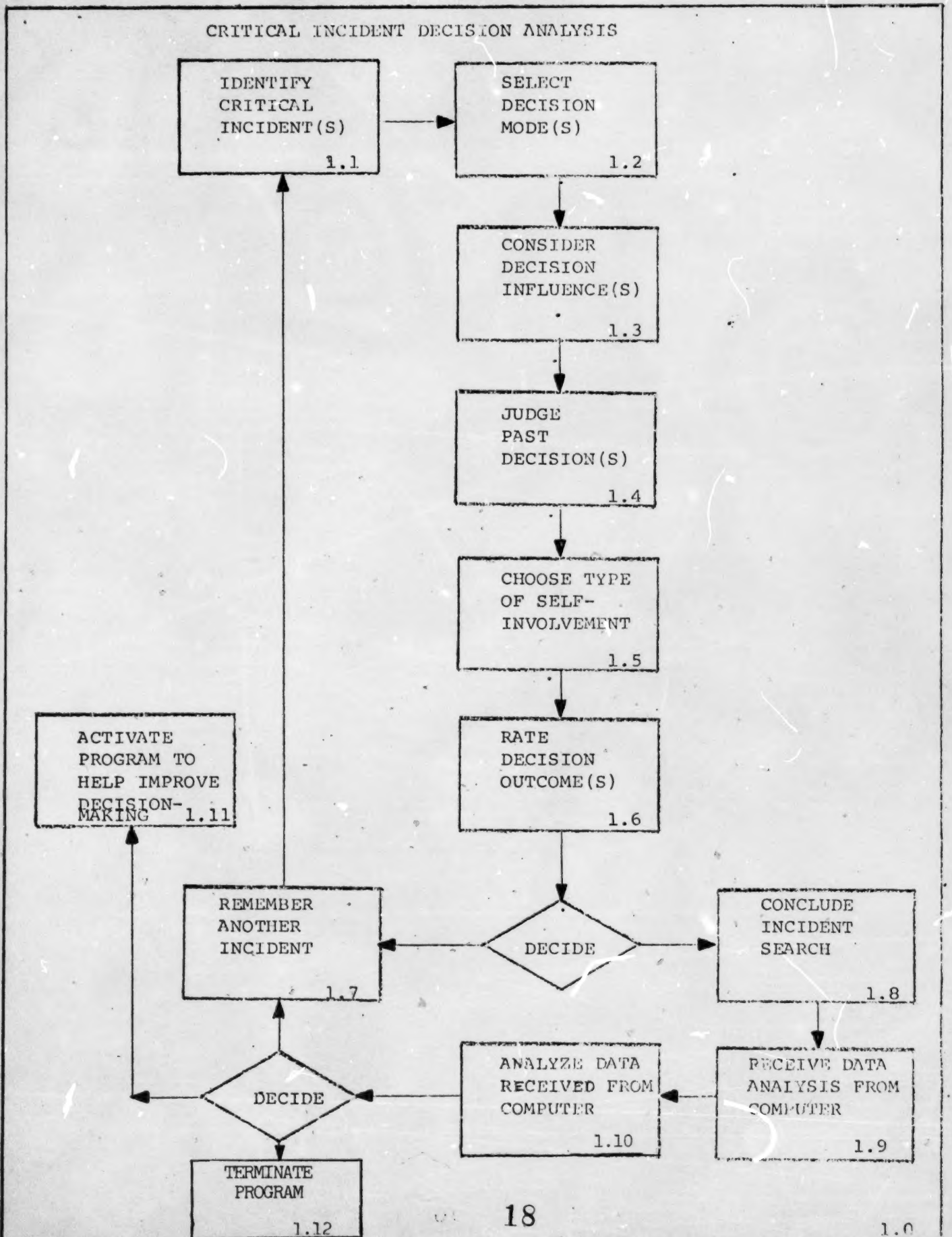

CRITICAL INCIDENT DECISION ANALYSIS
IDENTIFY CRITICAL INCIDENT(S) 1.1
SELECT DECISION MODE(S) 1.2
CONSIDER DECISION INFLUENCE(S) 1.3
JUDGE PAST DECISION(S) 1.4
CHOOSE TYPE OF SELF-INVOLVEMENT 1.5
RATE DECISION OUTCOME(S) 1.6
ACTIVATE PROGRAM TO HELP IMPROVE DECISION-MAKING 1.11
REMEMBER ANOTHER INCIDENT 1.7
DECIDE
CONCLUDE INCIDENT SEARCH 1.8
DECIDE
ANALYZE DATA RECEIVED FROM COMPUTER 1.10
RECEIVE DATA ANALYSIS FROM COMPUTER 1.9
TERMINATE PROGRAM 1.12
1.0

Figure 4

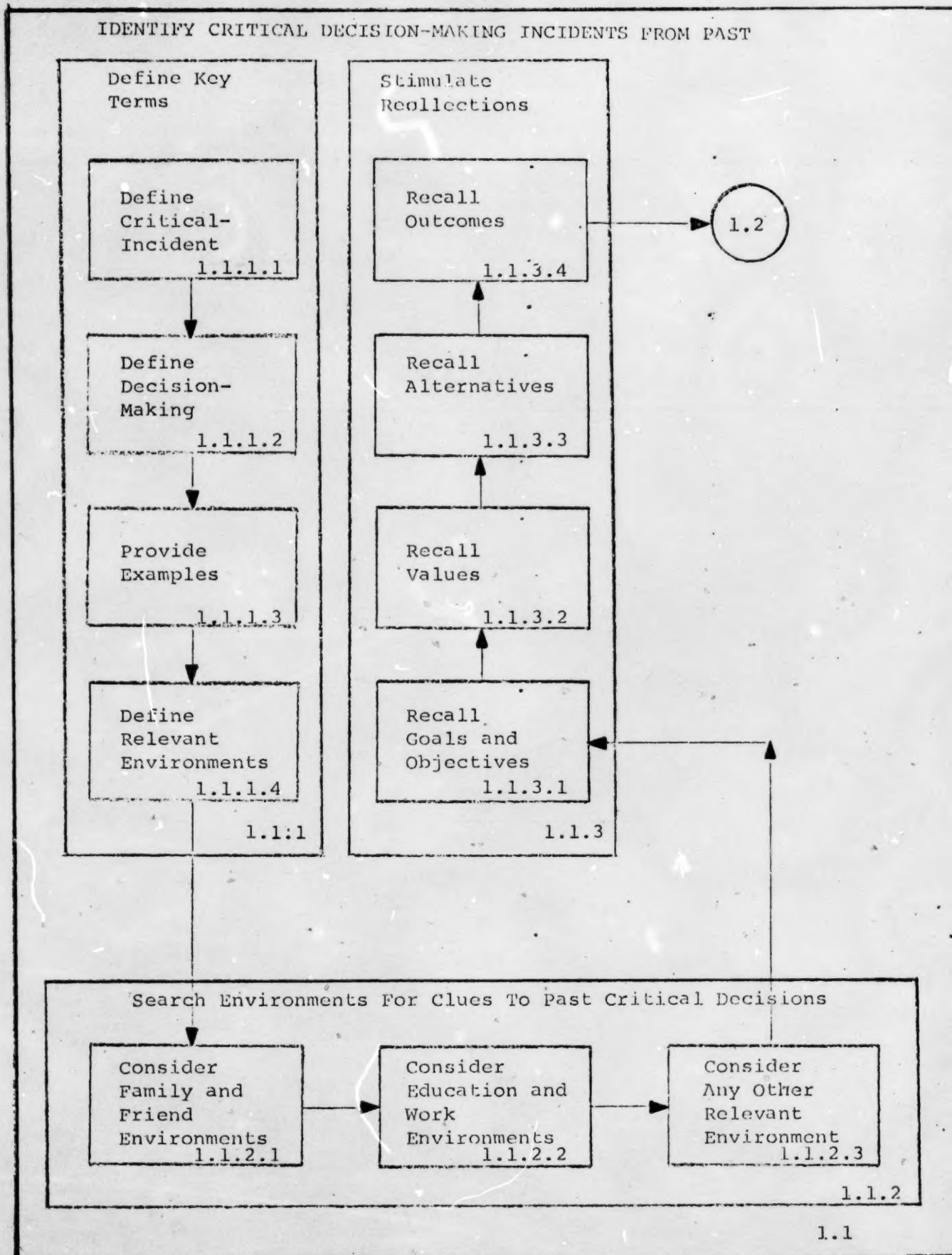

IDENTIFY CRITICAL DECISION-MAKING INCIDENTS FROM PAST
Define Key Terms
Define Critical-Incident 1.1.1.1
Define Decision-Making 1.1.1.2
Provide Examples 1.1.1.3
Define Relevant Environments 1.1.1.4
1.1:1
Stimulate Recollections
Recall Outcomes 1.1.3.4
Recall Alternatives 1.1.3.3
Recall Values 1.1.3.2
Recall Goals and Objectives 1.1.3.1
1.1.3
1.2
Search Environments For Clues To Past Critical Decisions
Consider Family and Friend Environments 1.1.2.1
Consider Education and Work Environments 1.1.2.2
Consider Any Other Relevant Environment 1.1.2.3
1.1.2
1.1

Figure 5

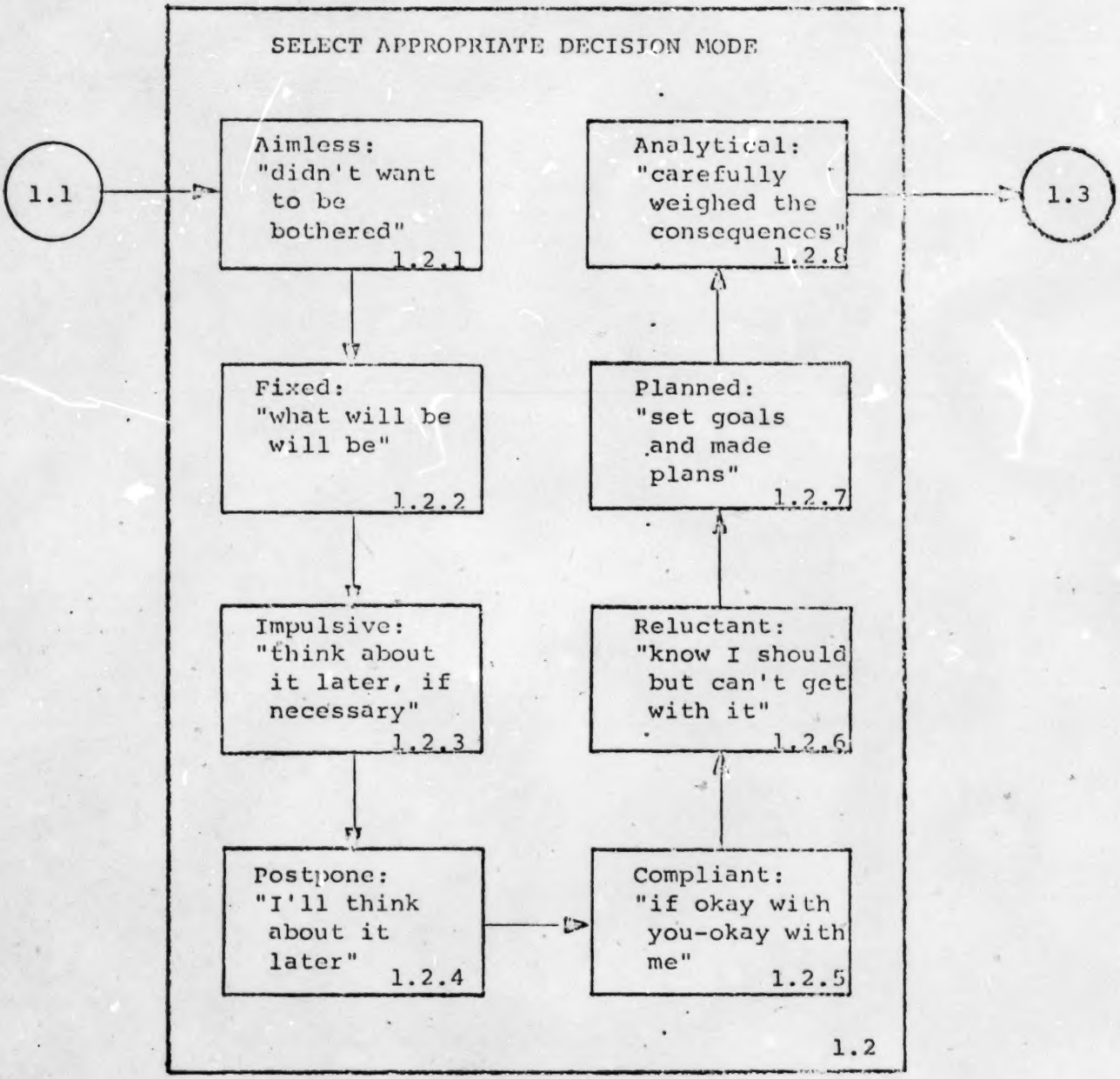

SELECT APPROPRIATE DECISION MODE
1.1
Aimless: "didn't want to be bothered" 1.2.1
Fixed: "what will be will be" 1.2.2
Impulsive: "think about it later, if necessary" 1.2.3
Postpone: "I'll think about it later" 1.2.4
Compliant: "if okay with you-okay with me" 1.2.5
Reluctant: "know I should but can't get with it" 1.2.6
Planned: "set goals and made plans" 1.2.7
Analytical: "carefully weighed the consequences" 1.2.8
1.3
1.2

Figure 6

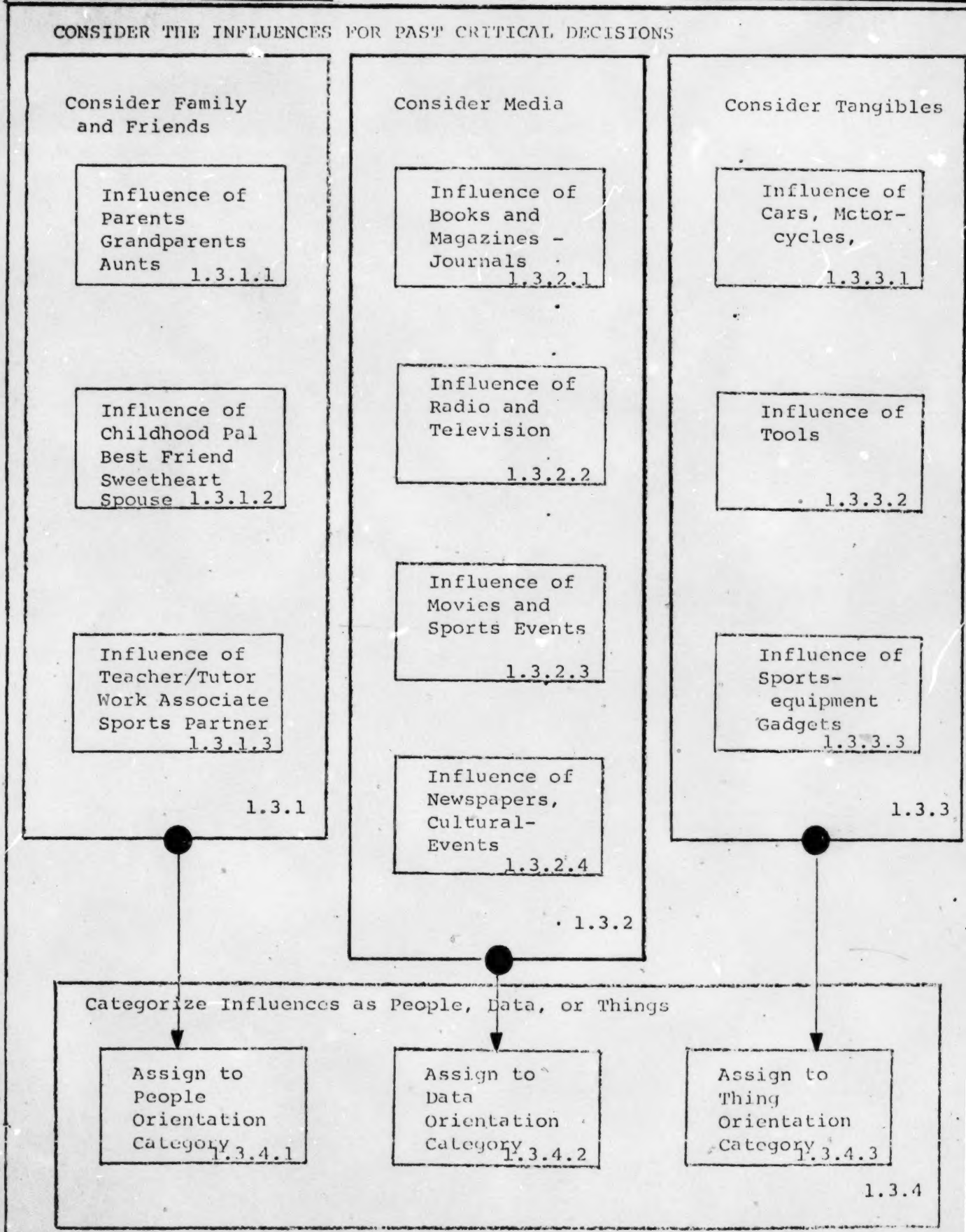
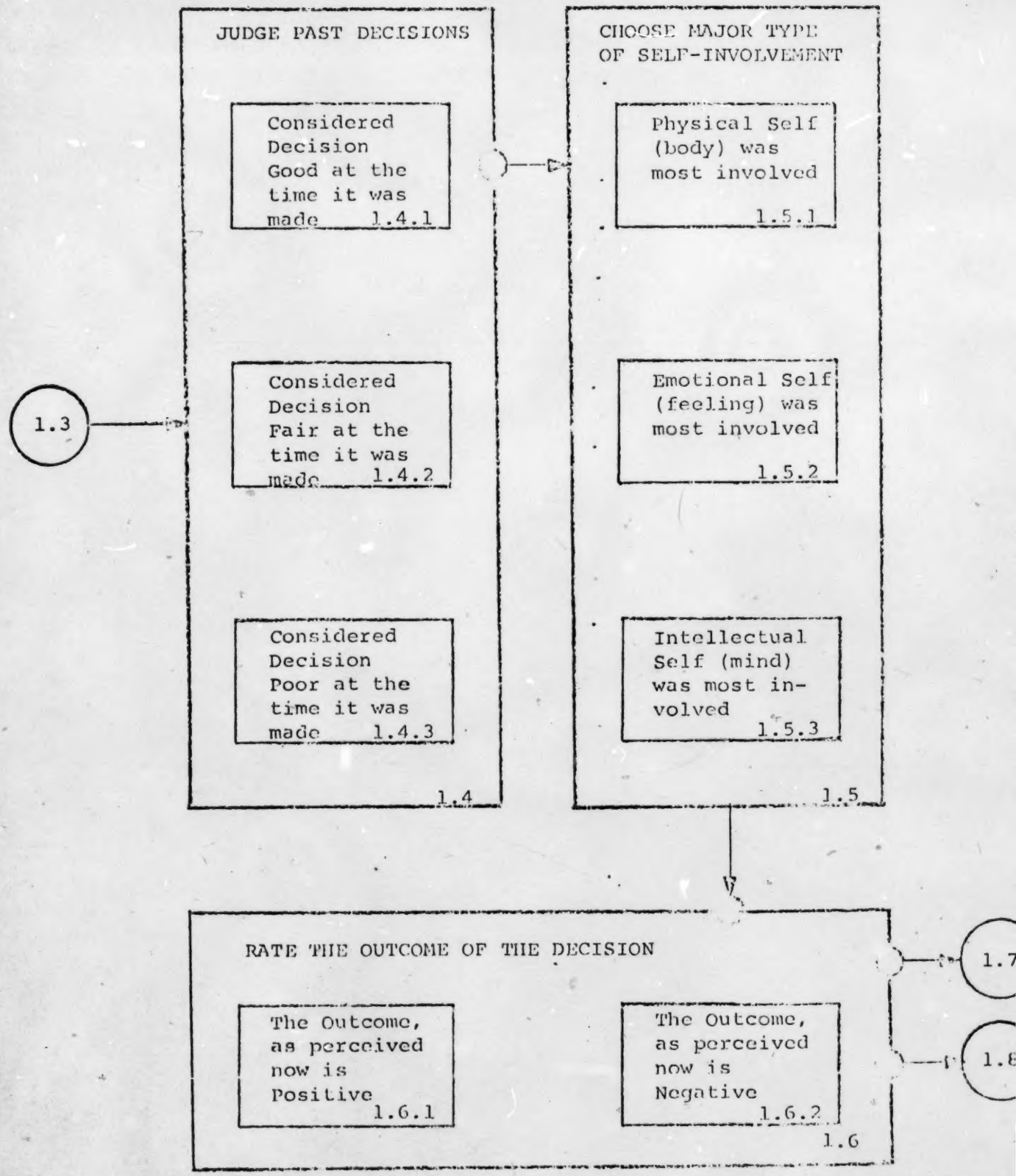

CONSIDER THE INFLUENCES FOR PAST CRITICAL DECISIONS
Consider Family and Friends
Influence of Parents Grandparents Aunts 1.3.1.1
Influence of Childhood Pal Best Friend Sweetheart Spouse 1.3.1.2
Influence of Teacher/Tutor Work Associate Sports Partner 1.3.1.3
1.3.1
Consider Media
Influence of Books and Magazines - Journals 1.3.2.1
Influence of Radio and Television 1.3.2.2
Influence of Movies and Sports Events 1.3.2.3
Influence of Newspapers, Cultural-Events 1.3.2.4
1.3.2
Consider Tangibles
Influence of Cars, Motor-cycles, 1.3.3.1
Influence of Tools 1.3.3.2
Influence of Sports-equipment Gadgets 1.3.3.3
1.3.3
Categorize Influences as People, Data, or Things
Assign to People Orientation Category 1.3.4.1
Assign to Data Orientation Category 1.3.4.2
Assign to Thing Orientation Category 1.3.4.3
1.3.4

Figure 7


JUDGE PAST DECISIONS
Considered Decision Good at the time it was made 1.4.1
Considered Decision Fair at the time it was made 1.4.2
Considered Decision Poor at the time it was made 1.4.3
1.4
CHOOSE MAJOR TYPE OF SELF-INVOLVEMENT
Physical Self (body) was most involved 1.5.1
Emotional Self (feeling) was most involved 1.5.2
Intellectual Self (mind) was most involved 1.5.3
1.5
1.3
RATE THE OUTCOME OF THE DECISION
The Outcome, as perceived now is Positive 1.6.1
The Outcome, as perceived now is Negative 1.6.2
1.6
1.7
1.8